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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,212	04/02/2004	Steven R. Kleiman	112056-0126DI	2407
24267	7590	03/01/2010		EXAMINER
CESARI AND MCKENNA, LLP				NGUYEN, THAN VINH
88 BLACK FALCON AVENUE			ART UNIT	PAPER NUMBER
BOSTON, MA 02210				2187
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			03/01/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/817,212	KLEIMAN ET AL.	
	Examiner Than Nguyen	Art Unit 2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 23 December 2009.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-16,39,40 and 45-51 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 45,46 and 50 is/are allowed.
- 6) Claim(s) 1-16,39,40,47-49 and 51 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/23/09.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

1. This is a response to the amendment, filed 12/23/09.
2. Claims 1-16,39,40,45-51 are pending.
3. The IDS, filed 12/23/09, has been entered.

Response to Arguments

4. Applicant's arguments filed 12/23/09 have been fully considered but they are not persuasive.
5. As to claim 1, Applicant explains "one way of deciding which parity calculation method requires the fewest reads is to determine the number of storage blocks to be written in each stripe. If the number to be written exceeds half the total number of storage blocks in the stripe, then the recalculation method will require the fewest reads, and is selected. If the number to be written is less than half the total number of storage blocks in the stripe, then the subtraction method will require the fewest reads, and is selected." Applicant's explanation is correct. However, the claim language lacks the above necessary step(s) that is required to be taken before the actual selection step. The claimed invention, as currently written, performs the selecting of the parity subtraction method or the recalculation method based on which method requires the fewest number of read operation to compute parity **without first** identifying which method requires the fewest reads (i.e. determine the number of storage blocks to be written in each stripe. If the number to be written exceeds half the total number of storage blocks in the stripe, then the recalculation method will require the fewest reads. If the number to be written is less than half the total number of storage blocks in the stripe, then the subtraction method will require the fewest reads). In short, the claim language must first indicate the step/function to determine the

number of storage blocks to be written in each stripe and to determine which method will yield the fewest reads. Only after this step is done, Applicant can claim the step of selecting between the two methods. Without the above step of determining the number of storage blocks to be written in each stripe, the determination of which method (parity/recalculation) to use can not be done. Applicant should refer to claim 45 (last 3 paragraphs), which truly has the correct and necessary language to use in claim 1.

6. To overcome the USC 112, second paragraph rejection, Applicant should add the limitations: determine the number of storage blocks to be written in each stripe, wherein the recalculation method will provide the fewest read if the number of blocks to be written exceeds half the total number of storage blocks in the stripe, and wherein the subtraction method will require the fewest read if the number to be written is less than half the total number of storage blocks in the stripe. These limitations will establish precedence the process of determining which method will yield the fewest read before the actual selection of the which method to use takes place.

7. As to claim 2, the rejection to this claim under 35 USC 112, 2nd paragraph, was an inadvertent mistake. That rejection is withdrawn. The correct rejection follows below.

8. As to claim 47, Applicant's amendment failed to address the previous rejection to this claim. The previous rejection did not question when the selection step takes place but to the steps required and results required before the selection can be done. (same general basis of rejection as claim 1). Applicant should review the previous rejection and modify the claim language accordingly to clarify what is being claimed.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-16,39,40,47-49,51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. As to claim 1, Applicant claims "**selecting a parity subtraction method or a recalculation method for parity calculation based on the method that requires the fewest number of read operations to compute parity for the I/O operations**". Applicant claims selecting a parity subtraction method or recalculation method for parity calculation based on the method that requires the fewest number of read operations to compute parity. However, Applicant fails to provide how the process of determining which method requires the fewest number of read operations. Without the process of actually first performing each parity calculation method (subtraction and recalculation), there is no way of determining which one requires the fewest reads. Therefore, Applicant must further include the actually steps of performing each parity method (subtraction and recalculation) to obtain the number of read operations necessary for each method to satisfy the 112, second paragraph, requirement.

12. Claims 16,39,40,47,51 have the same deficiency as claim 1 above and are rejected for the same reasons as claim 1.

13. As to claim 2, the language of "**controlling execution of I/O operations by identifying a plurality of contiguous storage blocks on a single storage device for use** by each I/O operation **so as to substantially minimize a number of read operations** needed for calculation of error correction parameters access a stripe" is vague and indefinite. The term "controlling" in

"controlling execution of I/O operations" is purely vague and ambiguous since the term controlling has an infinite number of meanings. The language of "so as to substantially minimize a number of read operations" is indefinite as Applicant neglected to indicate, in the claim language, how this "minimize" function is realized. Without specific steps to achieve those results, one of ordinary skills cannot make and/or use the invention, as claimed. Thus the claim is indefinite as it does not provide enough information to ascertain how the invention functions since Applicant only claims the result of a step/function without indicating the necessary steps to obtain that result. Applicant must include all the necessary process steps required to minimize a number of read operations needed for calculation of error correction parameters to satisfy the 112, second paragraph, requirement.

14. Claims 3-15 are also rejected for incorporating the error of the parent claim.
15. As to claim 47, Applicant claims "**selecting** whether to substantially minimize the number of read blocks **or** to substantially maximize chain lengths of read blocks, and **implementing the selection**, during the writing of the data to the plurality of storage devices, responsive to the block layout information, and responsive to whether substantially minimizing the number of read blocks or substantially maximizing chain lengths of read blocks requires fewer numbers of read operations". Applicant failed to indicate what process is involved in the "implementing the selection" step to realize "substantially minimize the number of read blocks" or "substantially maximizing chain lengths of read blocks", without which one of skills cannot understand how the claimed invention operates/functions to achieve the desired goal. The terms "implementing the selection" is already vague and ambiguous in meaning, which, without further steps defining what is involved in the implementation step, one in the art could not possibly

understand how the implementation is implemented to obtain the desired results. Thus, the claim language is vague and indefinite as Applicant fails to recite the necessary steps involved to "implement the selection". Applicant must include all the necessary process steps required to implement the selection to minimize the number of read blocks **and** maximize the chain length of read blocks to satisfy the 112, second paragraph, requirement.

16. Claims 48-49 are also rejected for incorporating the error of the parent claim 47.

Allowable Subject Matter

17. Claims 45-46,50 are allowed for reasons indicated previously (6/6/08).

18. Claims 1-16,39,40,47-49,51 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. The reason for allowable subject matter is indicated in the 6/6/08 Office Action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Than Nguyen whose telephone number is 571-272-4198. The examiner can normally be reached on 7am-3pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christian Chase can be reached on (571) 272-4190. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Than Nguyen/
Primary Examiner, Art Unit 2187

Than Nguyen
Primary Examiner
Art Unit 2187